



Environmental Restoration Division

September 2, 1993

Dear Invitee:

The United States Environmental Protection Agency (EPA) and the United States Department of Energy (DOE) invite you to attend a Visitors Day for an upcoming Superfund Innovative Technology Evaluation (SITE) demonstration. Filter Flow Technologies, Inc. (FFT), will demonstrate the Colloid Polishing Filter Method (CPFM) technology at Rocky Flats Plant (RFP) from September 13 through September 17, 1993. The purpose of the demonstration is to determine how effectively the CPFM technology removes certain radionuclides from groundwater. The enclosed fact sheet describes the SITE program, the technology demonstration project, and RFP.

The Visitors Day will be held from 12:30 p.m. to 3:00 p.m. on Wednesday, September 15, 1993, at RFP. It will consist of a general plant tour, and a viewing of the technology site accompanied by a briefing about the SITE demonstration technology.

Those who plan to attend should fill out and return by fax the attached pre-registration form, or call with the required information, by Thursday September 9, 1993. Pre-registration will be accepted on a first-come, first-served basis. All attendees must be U.S. citizens. All visitors must preregister.

A map of the RFP, Denver area will be provided after pre-registration.

Please circulate this information in your office or community. We look forward to seeing you on September 15.

Sincerely,

Martin Hestmark  
Manager, Rocky Flats Project  
U.S. EPA

Richard J. Schassburger  
Director, Environmental Restoration Division  
U.S. DOE

Enclosures

United States Environmental Protection Agency  
Superfund Innovative Technology Evaluation (SITE) Program  
Demonstration of the Filter Flow Technologies, Inc. CPFM technology  
Rocky Flats Plant

September 15, 1993, 12:30 p.m.

**Pre-Registration Information for SITE Demonstration**

Please complete one form for each registrant (feel free to duplicate this form) and return it by **September 9, 1993**. No one will be permitted to attend the Visitors Day without preregistering. Late pre-registrations cannot be accepted.

Attendee Name:

\_\_\_\_\_

Social Security Number:

\_\_\_\_\_

Birthdate:

\_\_\_\_\_

Title:

\_\_\_\_\_

Organization:

\_\_\_\_\_

Address:

\_\_\_\_\_

City, State, Zip Code:

\_\_\_\_\_

Telephone Number:

\_\_\_\_\_

FAX Number:

\_\_\_\_\_

Attendees must be U.S. citizens, 12 years of age or older.

Please FAX this form or provide the requested information by telephone to:

Toni Moore  
Administrative Information Officer  
EG&G Rocky Flats, Inc.  
P.O. Box 464, T130F  
Golden, Colorado 80402  
Phone (303) 966-6616  
FAX (303) 966-6153



United States  
Environmental Protection  
Agency

Office of Solid Waste And Emergency Response  
Office of Research and Development  
Washington, DC 20460

GROUP	Response	ACT	INFO
11000			
11010			
11100			
11200			
11300			
11400			
11500			
11600			
11700			

**SITE**



Environmental Restoration Division



## Program Fact Sheet September 1993

**Demonstration of the  
Colloid Polishing Filter Method  
Rocky Flats Plant  
Golden, Colorado**

### THIS FACT SHEET DESCRIBES...

- EPA's Superfund Innovative Technology Evaluation (SITE) Program
- A proposed technology demonstration to be conducted at the U.S. Department of Energy's (DOE) Rocky Flats Plant
- How you can receive more information on the proposed demonstration

### INTRODUCTION

The U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (EPA) Region VIII are joined together in a cooperative effort to test and demonstrate an innovative technology at Rocky Flats Plant (RFP). The technology demonstration is sponsored by the EPA Superfund Innovative Technology Evaluation (SITE) program.

The technology proposed for demonstration at RFP is the Colloid Polishing Filter Method (CPFM) technology developed by Filter Flow Technologies, Inc. (FFT) of League City, Texas. The demonstration will measure the effectiveness of the CPFM technology in removing low levels of radionuclides (radioactive elements that decay and give off energized particles) from contaminated water. In particular, the demonstration will measure the technology's effectiveness in removing uranium and gross alpha emitting contaminants.

The demonstration is a full-scale field test meant to evaluate a new technology option for potential application to remediation of radionuclide contaminated

groundwater, wastewater, and soil remediation secondary wastewater at Superfund and other sites. The demonstration is being conducted as a cooperative effort under an Interagency Agreement signed between the DOE, Colorado Department of Health (CDH), and the EPA in January 1991. The CPFM technology is the first technology demonstrated at a DOE facility.

### EPA's SITE PROGRAM

The EPA SITE program was created in 1986 to demonstrate and evaluate innovative treatment technologies that may significantly reduce the toxicity, mobility, or volume of hazardous waste. The SITE Program also generates reliable performance and cost information on the technologies to evaluate cleanup alternatives for similarly contaminated sites.

Each year, EPA solicits proposals from private technology developers to demonstrate innovative technologies at contaminated sites. The EPA SITE program is responsible for the following activities:

- Selection of innovative technologies
- Identification of sites with wastes suitable for treatment by selected technologies
- Preparation of a technology demonstration package that includes detailed information regarding the selected technology, site contamination, and test objectives. The package also includes a test plan, field sampling plan, and waste management plan.
- Preparation of a fact sheet
- Preparation of the site

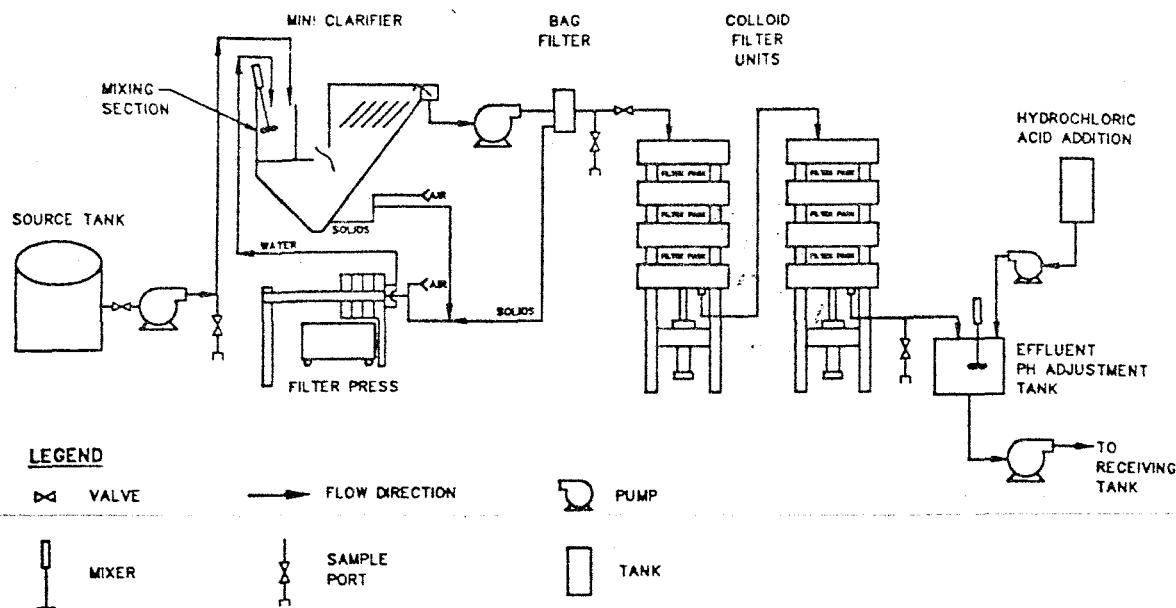


Figure 1  
CPFM Process Flow Diagram

- Implementation of the technology demonstration
- Audits of field and laboratory analyses
- Organization of a Visitors Day for viewing the technology demonstration
- Evaluation of technology performance
- Preparation of demonstration reports

## TECHNOLOGY DESCRIPTION

The FFT CPFM technology uses specially designed filter beds in a filter press unit to treat water contaminated with low concentrations of radionuclides (See Figure 1). The demonstration will treat groundwater collected in an interceptor trench constructed around solar evaporation ponds located within RFP. Contaminated water is pumped from an interceptor trench pumphouse to on-site storage tanks, which will provide influent for the CPFM system. Treated water will be routed back to storage. During the demonstration, samples will be collected at key locations and analyzed to determine the effectiveness of the treatment technology.

Adjustment of influent water pH will not be required for the CPFM demonstration because the influent water is within the optimum pH range for the technology. Contaminated groundwater will be pumped from the source storage tank to a mini-clarifier to remove suspended solids. Settled solids from the

bottom of the clarifier are dewatered in a small filter press. Solids will be collected and placed for final storage in a solids disposal container.

Clarifier effluent is pumped through two series bag filters for additional solids removal. Bag filter effluent is routed to the colloid filter unit. The colloid filter unit consists of a series of filter plates, with a filter pack placed between each set of plates. A high pressure is applied to the frame of the filter unit to promote a tight seal around each plate. The pre-treated water is evenly dispersed through the filter packs where contaminants are removed by the filter bed material through a combination of chemical and physical mechanisms. Contaminants are trapped in the filter packs, forming filter cake. Effluent from the colloid filter unit is treated to lower the pH to the influent groundwater pH. During the demonstration, the pH-adjusted effluent will be routed to a designated storage tank.

After treatment, the pressure on the series of filters is released and the filter packs are removed from between the plates. The filter cake will be mixed with solids from the mini-clarifier and bag filters and stabilized to meet EPA land disposal restrictions. The stabilized material will be stored on site at a permitted or interim status storage facility under the current facility Resource Conservation and Recovery Act permit.

## TECHNOLOGY DEMONSTRATION

Rocky Flats was identified as the site for the FFT CPFM technology demonstration due to the nature of the contamination in the interceptor trench groundwater and its compatibility with the technology's cleanup goals. The contaminated groundwater from the interceptor trench system provides a suitable test stream for the demonstration.

DOE and EPA's Office of Research and Development agreed that Rocky Flats would be an appropriate site for this technology demonstration. A Memorandum of Understanding between DOE and EPA Headquarters, which discusses cooperative research and development efforts to clean up hazardous wastes, facilitates this mutually beneficial project.

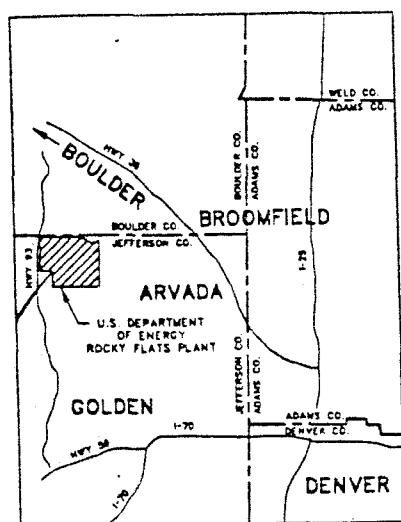


Figure 2  
Site Location Map

The demonstration will be useful in deciding whether the FFT CPFM technology is an effective alternative for cleaning up similar hazardous waste sites across the country. The CPFM technology will be evaluated by determining: (1) how effectively the technology removes contaminants such as radionuclides in the groundwater and (2) whether the treated water and filter cake meet established cleanup goals. The cleanup goals are those established for drinking water by CDH.

A small-scale field study of the CPFM technology was conducted at a uranium mining facility in Texas. Two more small-scale laboratory studies were completed at Rocky Flats in September 1991. Uranium removal efficiencies for the Rocky Flats waste ranged from 98.9 to 99.6 percent.

The Rocky Flats demonstration is scheduled for

September 13, 1993 and will last approximately 2 weeks. The treatment unit will treat up to 5 gallons of groundwater per minute.

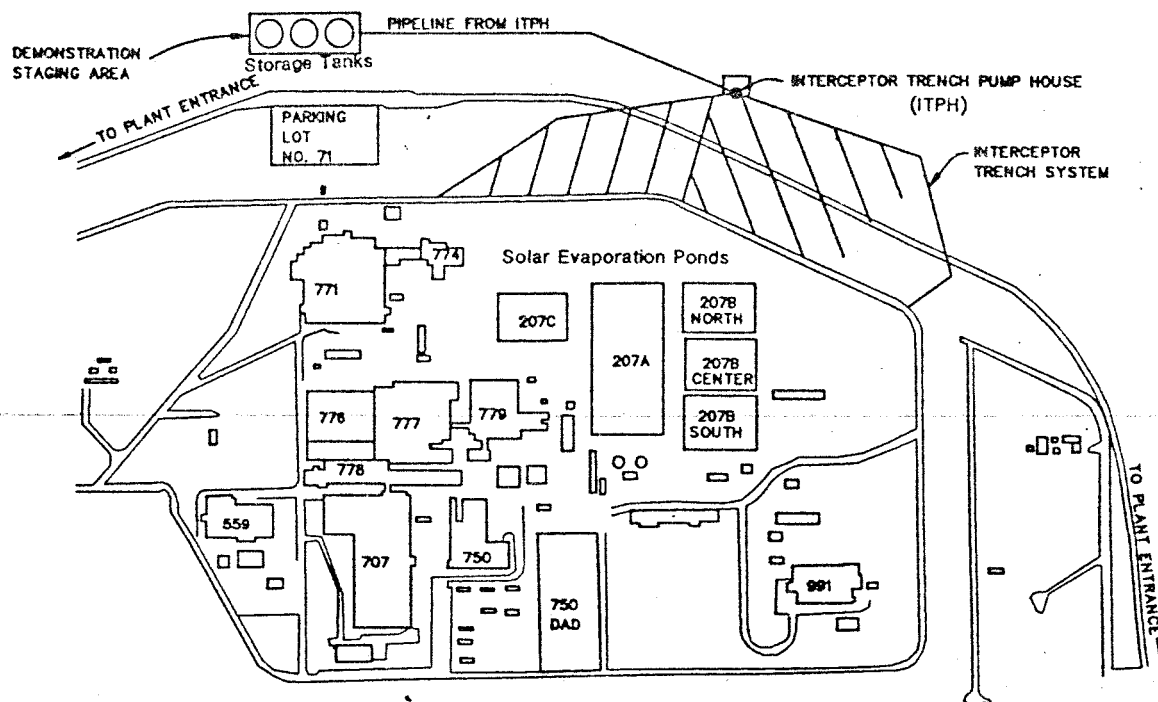
EPA is preparing a detailed demonstration test plan that outlines the methods and procedures for testing and evaluating the technology. A report summarizing the demonstration results will be issued approximately one year following completion of the demonstration. A limited number of copies of the report will be available at no charge from EPA's Center for Environmental Research Information (CERI), 26 West Martin Luther King Drive, Cincinnati, Ohio 45268. Additional copies can be purchased from the National Technical Information Service, Ravensworth Building, Springfield, Virginia 22151. Reference copies will be available at EPA libraries in the Hazardous Waste Collection.

## ROCKY FLATS PLANT BACKGROUND

RFP is located in northern Jefferson County, Colorado, approximately 16 miles northwest of Denver. RFP began operations in 1952, and was previously a key facility in the federal government's nationwide nuclear weapons research, development, and production program. Due to changes in the direction of the United States nuclear arms program, the primary mission of the plant has been changed. Current plant activities include decontamination and decommissioning of facilities, environmental restoration, waste management, and economic conversion.

Wastes generated by RFP include hazardous wastes, radioactive wastes, and mixed hazardous radioactive wastes. Historically, plant operations incorporated safety controls intended to protect workers, the public, and the environment. However, some incidents resulted in on-site and off-site radioactive and hazardous materials contamination. Like many industries, RFP used accepted methods of disposal such as shallow-land burial that would not meet today's disposal standards. As a result, some of the soil and ground and surface water at RFP became contaminated with radionuclides. DOE, EPA, and CDH are pursuing cleanup at RFP under the Interagency Agreement signed in January 1991.

The solar evaporation ponds and storage tanks are centrally located within RFP and are designated as Operable Unit 4 of the environmental restoration program in the Interagency Agreement (Figure 3). Between 1956 and 1986, the SEPs were used to store and treat liquid process wastes. Beginning in 1986, process wastes were no longer disposed of in the ponds. SITE investigations will serve as a basis for final remedial options.



**Figure 3**  
**Solar Evaporation Ponds Location**

### ***ADDITIONAL INFORMATION***

Please contact the following individuals with questions regarding the technology or the demonstration.

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